Technion-Israel Institute of Technology
Faculty of Mechanical Engineering

הטכניון-מכון טכנולוגי לישראל
הפקולטה להנדסת מכונות

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ג' 20.03.2018 (ד' בניסן, תשע"ח), בניין ליידי-דייויס, אודיטוריום 250, 13:30.

מרצה: סיגל גוטליב

מנחה: פרופ'/ח מרים זקסנהויז

על הנושא:

Electroencephalographic Responses during a Motor Task with Healthy and Stroke Patients

The seminar will be given in Hebrew

תקציר ההרצאה :

There is a growing interest in ErrPs that are evoked during motor tasks, both for investigating motor learning and for potential applications to brain computer interfaces. Motor errors are classified as either execution errors, reflecting deviations between the observed and planned movements, or outcome errors, reflecting failure to perform the task. Previous work with healthy subjects in our laboratory revealed that execution errors elicit the two subcomponents of P300, P3a and P3b, while, in line with other research, outcome errors elicit error related negativity (ERN). In contrast with investigations of ErrPs in healthy subjects, investigations of ErrPs in stroke patients (SPs) were restricted to cognitive tasks and even in that domain were not conclusive. ErrPs evoked in SPs in response to motor errors are especially interesting to assess their error monitoring and whether their internal models are updated to reflect the resulting motor deficiency.

The main objectives of this study were: (i) Characterize ErrPs evoked in response to execution and outcome errors during a video-game. (ii) Compare ErrPs evoked by natural or imposed outcome errors. (iii) Characterize ErrPs evoked in stroke patients when using their affected versus unaffected hand.

Experiments were conducted with 12 healthy subjects and 3 SPs. Results indicate that (i) Different execution errors elicit statistically different front-central positivity (P3a-like component) and parietal positivity (P3b-like component). (ii) Natural errors were characterized by a stronger P3a-like component, suggesting natural and imposed outcome errors were perceived differently. (iii) Significant positive component was evoked in all three SPs when failing to perform the task with either the affected and unaffected hand. (iv) The response of the SPs to the disturbances that was introduced when using their unaffected hand differed from the response of healthy subjects. Further investigations are needed to check these results with a larger population of SPs and investigate the origin of the observed differences.

בברכה,

פרופ"א מתי סאס
מרכז הסמינרים